

# 2012 PEQUANNOCK AND WANAQUE WATER SYSTEMS ANNUAL WATER QUALITY REPORT

This is an annual report on the quality of water delivered by City of Newark. It meets the Federal Safe Drinking Water Act (SDWA) requirement for “Consumer Confidence reports” and contains information on the source of our water, its constituents, and the health risks associated with any contaminants. Safe water is vital to our community. Please read this report carefully and, if you have questions, call the numbers listed below.

Call us for information about the next opportunity for public participation in decisions about our drinking water at 973-733-6303. Find out more about the City of Newark on the Internet at: [www.ci.newark.nj.us](http://www.ci.newark.nj.us)

The Newark Water System is a public community water system consisting of 0 well(s), 0 wells under the influence of surface water, 1 surface water intake(s), 1 purchased ground water source(s).

This system's source water comes from the following aquifer(s) and/or surface water body(s) (if applicable): Charlottesville Reservoir.

This system purchases water from the North Jersey District Water Supply Commission (NJDWSC) water system.

### SUSCEPTIBILITY RATINGS FOR NEWARK WATER DEPARTMENT SOURCES

The table at right illustrates the susceptibility ratings for the seven contaminant categories (and radon) for each source in the system. The table provides the number of wells and intakes that rated high (H), medium (M), or low (L) for each contaminant category. For susceptibility ratings of purchased water, refer to the specific water system's source assessment report.

The seven contaminant categories are defined at the bottom of this page. New Jersey Department of Environmental Protection (NJDEP) considered all surface water highly susceptible to pathogens; therefore all intakes received a high rating for the pathogen category. For the purpose of Source Water Assessment Program, radionuclides are more of a concern for ground water than surface water. As a result, surface water intake's susceptibility to radionuclides was not determined and they all received a low rating.

If a system is rated highly susceptible for a contaminant category, it does not mean a customer is or will be consuming contaminated drinking water. The rating reflects the potential for contamination of source water, not the existence of contamination. Public water systems are required to monitor for regulated contaminants and to install treatment if any contaminants are detected at frequencies and concentrations above allowable levels. As a result of the assessments, DEP may customize (change existing) monitoring schedules based on the susceptibility ratings.

- PATHOGENS:** Disease-causing organisms such as bacteria and viruses. Common sources are animal and human fecal wastes.
- NUTRIENTS:** Compounds, minerals and elements that aid growth, that are both naturally occurring and man-made. Examples include Nitrogen and Phosphorus.
- VOLATILE ORGANIC COMPOUNDS:** Man-made chemicals used as solvents, degreasers, and gasoline components. Examples include Benzene, Methyl Tertiary Butyl Ether (MTBE), and Vinyl Chloride.

- PESTICIDES:** Man-made chemicals used to control pests, weeds and fungus. Common sources include land application and manufacturing centers of pesticides. Examples include herbicides such as Atrazine, and insecticides such as Chlordane.
- INORGANICS:** Mineral-based compounds that are both naturally occurring and man-made. Examples include Arsenic, Asbestos, Copper, Lead, and Nitrate.
- RADIONUCLIDES:** Radioactive substances that are both naturally occurring and man-made. Examples include Radium and Uranium.
- RADON:** Colorless, odorless substances, cancer-causing gas that occurs naturally in the environment. For more information go to: [www.nj.gov.dep/rpp/radon/index.htm](http://www.nj.gov.dep/rpp/radon/index.htm) or call 1-800-648-0394.
- DISINFECTION BYPRODUCT PRECURSORS:** A common source is naturally occurring organic matter in surface water. Disinfection by-products are formed when disinfectants (usually Chlorine) used to kill pathogens reacts with dissolved organic material (for example leaves) present in surface water.

## Overview

### WATER SOURCE

The City of Newark's water comes entirely from surface sources in the Pequannock and Wanaque watersheds that cover 150 square miles of forestlands in Morris, Sussex and Passaic Counties. Newark's Pequannock Supply is from five pristine water supply reservoirs; the 14.4 billion gallon supply is from Charlottesville, Echo Lake, Canistear, Clinton and Oak Ridge reservoirs. NJDWSC gets its water from two of the most pristine water supply reservoirs in the country; namely, the 29.6 billion gallon Wanaque and the 7 billion gallon Monksville. The Commission also operates two pump stations designed to pump 250 million gallons per day of water from the Pompton River and 150 million gallons per day from the Ramapo River into the Wanaque Reservoir as needed. The New Jersey Department of Environmental Protection (NJDEP) has completed Source Water Assessment Reports and Summaries for all Public Water Systems (PWS). Further information on the source water assessment program can be obtained by logging on to NJDEP's source water assessment website at [www.state.nj.us/dep/swap](http://www.state.nj.us/dep/swap) or by contacting NJDEP's Bureau of Safe Drinking Water at 609-292-5550. You may also contact the City of Newark Water Department at 973-733-5360. The City of Newark was required to conduct the UCMR sampling and testing for the Unregulated Contaminants Monitoring Rule (UCMR). During this testing no UCMR contaminants were detected.

### SAFEGUARDING OUR WATER

The City of Newark Water Treatment plant is located in West Milford, NJ and the NJDWSC Water Treatment Plant is located in Wanaque, NJ, where our water is treated and filtered to ensure its safety and potability. To ensure the safety of the water, NJDWSC and Newark routinely monitors and tests the water at rivers, lakes and streams that supply its reservoirs. We continually monitor the quality of water throughout the distribution system, which finds its way to you, the consumer. All analyses are conducted by NJDEP-certified water testing laboratories.

### CURRENT WATER ISSUES

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA and Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the EPA Safe Drinking Water Hotline: 1-800-426-4791.

# NEWARK'S WATER QUALITY REPORT 2012

Regular Contaminants	Units	Maximum Contaminant Level Goal (MCLG)	Maximum Contaminant Level (MCL)	Compliance Achieved	Pequannock System Results PWS ID# NJ0714001	NJDWSC Results PWS ID# NJ1613001	Source of Contamination
Inorganic Contaminants							
Arsenic	ppb	5	10	YES	<3.0	N/A	Erosion of natural deposits; runoff from orchards; runoff from glass & electronics production wastes
Barium	ppm	2	2	YES	0.0065	0.0063	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Mercury	ppm	0.002	0.002	YES	<0.002	N/A	Erosion of natural deposits; discharge from refineries and factories
Fluoride	ppm	4	4	YES	0.055	N/A	Erosion of natural deposits; additive promoting strong teeth. Discharge from fertilizer and AL factories
Nitrate	ppm as Nitrogen	10	10	YES	<1.0	N/A	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.
Lead and Copper( 2012)	Units	Maximum Contaminant Level Goal (MCLG)	Action Level	Compliance Achieved	90th Percentile Pequannock	90th Percentile Wanaque	
Lead	ppb	0	0.015	YES	9.00	3.4	Corrosion of household plumbing systems;erosion of natural deposits.
Copper	ppm	1.3	1.3	YES	0.082	0.368	Corrosion of household plumbing systems;erosion of natural deposits.
Microbiological Substances							
Total Coliform Bacteria	presence of positive sample	0	5% of monthly samples are positive	YES	0	0	Naturally present in the environment
Turbidity							
Turbidity	NTU	N/A	TT =1 NTU	YES	(highest Single Measurement) Average	0.52(highest Single Measurement) Average 0.07	Soil Runoff
			TT=percent of samples <0.3 NTU(min 95% required)	YES	0.43 (highest single measurement 01/01/12-12/31/12)		
Disinfectants							
Chlorine		MRDLG=4ppm	MRDL=4ppm	Yes	0.479 (annual average)		Chlorine remaining in treated water and available to destroy disease causing organisms.
Stage 1 Treatment Byproducts (RAA)*							
Total Trihalomethanes (TTHMs)		N/A	80	YES	71.4		By-product of drinking water disinfection
Haloacetic Acid		N/A	60	YES	51.2		By-product of drinking water disinfection
Secondary Contaminants	units		Recommened Upper Limit (RUL)	Meet Standards?	Pequannock System Results	NJDWSC Results	Source of Contamination
Alkalinity	ppm		NS	yes	28.2	23.4	A characteristic of water caused primarily by carbonate, bicarbonate and hydroxideions.
Aluminum	ppm		≤0.200	yes	0.368	0.07	By-product of water treatment using aluminum salts.
Chloride	ppm		<250	yes	21.5	28.2	Erosion of natural deposits.
Color	CU		≤10	yes	4	3	Presence of manganese and iron, plankton, humus, peat and weeds.
Hardness(as CaCO3)	ppm		50-250	yes	42.7	39.7	A characteristic of water caused primarily by salts of calcium and magnesium
Iron	ppm		≤0.3	yes	0.017	0.228	Erosion of natural deposits
Manganese	ppm		≤0.05	yes	0.013	0.0023	Erosion of natural deposits
pH	units		6.5-8.5	yes	7.88	8.16	Presence of carbonates, bicarbonates and carbon dioxide.
Sodium	ppm		≤50	yes	12.9	16.8	Runoff from road salt and from some water softening processes.
Sulfate	ppm		<250	yes	11.7	6.20	Drainage of mining wastes, erosion of natural deposits.
Total Dissolved Solids	ppm		≤500	yes	81.1	137	Erosion of natural deposits.
Zinc	ppm		≤5	yes	<0.2	0.006	Erosion of natural deposits; pipe corrosion and/or runoff.
Stage 2 Trihalomethanes (ppb)				Stage 2 Haloacetic Acids (ppb)			
Site No.	Min	Max	LRAA*	Site 1	Min	Max	LRAA*
Site 1	34.8	43.8	N/A	Site 2	10	49.8	N/A
Site 2	35.6	49.3	N/A	Site 3	9	37.6	N/A
Site 3	36.2	56.4	N/A	Site 4	11	41.3	N/A
Site 4	35.3	57.2	N/A	Site 5	9	42	N/A
Site 5	33.8	55.5	N/A	Site 6	20	46.6	N/A
Site 6	38.6	43.5	N/A	Site 7	17	30	N/A
Site 7	35	50.3	N/A	Site 8	6	55	N/A
Site 8	43	54.5	N/A	Site 9	13	34	N/A
Site 9	36.1	64.4	N/A	Site 10	6	45	N/A
Site 10	35.7	51.5	N/A	Site 11	26	47.3	N/A
Site 11	30.4	50	N/A	Site 12	8	39	N/A
Site 12	28.2	46.3	N/A		24	48.9	N/A
Stage 2 Trihalomethanes (ppb) Wanaque				Stage 2 Haloacetic Acids (ppb) Wanaque			
Site No.	Result			Site No.	Result		
Site 1	31.6			Site 1	24		
Site 2	34.7			Site 2	23.9		

## SUSCEPTIBILITY RATINGS FOR NEWARK'S WATER DEPARTMENT SOURCES

	PATHOGENS			NUTRIENTS			PESTICIDES			VOLATILEORGANIC COMPOUNDS			INORGANICS			RADIONUCLIDES			RADON			DISENFECTION BY-PRODUCT PRECURSERS		
	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L	H	M	L
WELLS = 0																								
GWI - 1																								
SURFACE WATER INTAKES - 1	1					1			1			1	1					1			1			

### KEY:

The table below shows the results of our water quality analyses. The table contains the name of the substance, the highest level allowed by regulation, the ideal goals for public health, the amount detected, the usual sources of such contamination, footnotes explaining our findings, and a key to units of measurement. Definitions of MCL, MRDL, MRDLG and MCLG are important.

- Maximum Contaminant Level (MCL):** The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available technology.
- Maximum Contaminant Level Goal (MCLG):** The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
- Maximum Residual Disinfectant Level (MRDL):** The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- Maximum Residual Disinfectant Level Goal (MRDLG):** The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.
- Action Level (AL):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirement that a water system must follow.
- Treatment Technique (TT):** A required process intended to reduce the level of a contaminant in drinking water.
- ppm (parts per million):** 1 drop in 10 gallons, 1 inch in 16 miles, or one penny in \$10,000.
- ppb (parts per billion):** 1 drop in 10,000 gallons, 1 inch in 16,000 miles, or one penny in \$10,000,000.
- picoCurie (pCi):** A unit used to describe the level of activity or decay of a radioactive element.
- mfl:** million fibers per liter.
- mrem/year:** millirems per year (a measure of radiation absorbed by the body).
- ntu:** Nephelometric Turbidity Units.
- pCi/l:** pico curies per liter (a measure of radioactivity).
- ppt:** parts per trillion, or nanograms per liter.
- ppq:** parts per quadrillion, or picograms per liter.
- Secondary Contaminants:** Federal drinking water measurements for substances that are not health related. These are recommended levels and reflect aesthetic qualities of water.
- SMCL:** Secondary Maximum Contaminant Level.
- TON:** Threshold Odor Number.
- NS:** No Standard.
- ND:** Not detectable at testing limit.
- CU:** Color Units
- RUL:** Recommended Upper Limit



# Questions and Answers

## VULNERABILITY ASSESSMENT

In response to the events of September 11, and to the State's Domestic Security Preparedness Act, Newark has completed a vulnerability assessment of its water supplies, treatment plant and transmission system, provided additional security, and reviewed operations to include a greater emphasis on security issues. The City is taking the necessary proactive steps to implement the conclusions of this study.

## IS MY WATER HARD OR SOFT?

Hardness describes the level of the dissolved natural minerals (Calcium and Magnesium) in drinking water. These minerals are an important part of a healthy diet. Hard water contains more mineral nutrients and less sodium. A gradual build-up of Calcium and Magnesium in hard water can form harmless, filmy white deposits on faucets, bathtubs, and tea kettles. Hard water also requires more soap to lather fully. The degree of water hardness varies depending on where you live. Newark's water in this area typically has a hardness level of 47 to 60 parts per million which means it is moderately soft.

## WHY IS THERE CHLORINE IN MY WATER?

A century ago, acute diseases such as Typhoid fever and Cholera were a very real threat to our health because the microorganisms that caused these diseases were found in public drinking water. However, for almost 100 years, water suppliers in America and other countries have used chlorine to treat or disinfect drinking water. According to the U.S. Environmental Protection Agency (USEPA) and other health agencies, Chlorine is currently one of the most effective disinfectants used to kill harmful microorganisms. Disinfection of all public water supplies is required by federal and state laws and regulations, including the Safe Drinking Water Act and the Surface Water Treatment Rule.

## WHAT IS TURBIDITY?

Turbidity is a measure of the cloudiness of water. The City monitors it because it is a good indicator of water quality. High turbidity can hinder the effectiveness of disinfection.

## DOES NEWARK ADD FLUORIDE TO MY WATER?

No, Newark does not add fluoride to the water in your community. However, a small amount of fluoride may occur naturally in your water. About 0.10 parts per million fluoride was detected in your water supply last year.

## ITEMS OF SPECIAL INTEREST TO NEWARKERS

You may have noticed media attention to public water supply issues related to radiological substances, Mercury, Lead, Radon, Arsenic and Cryptosporidium. At Newark, we are well aware of these and other water quality matters. We continue to perform extensive testing of all of our water supplies. We want to assure our customers that we are providing the high-quality water you expect and deserve. You may be interested to know the following information:

- Radiological Substances:** Our tests show the radiological substances level in our water supplies is significantly less than the level deemed acceptable by the USEPA. In some cases, the level is so low that it cannot be detected. These substances are naturally occurring radioactive compounds.
- Mercury:** Our testing equipment can detect mercury at a level 10 times less than the standard, and even at that low level, we have not detected mercury in our supplies.
- Lead:** The concentration of Lead leaving the NJDWSC (Wanaque) and Newark Pequannock Treatment Plants is far below the action level (AL) of 15 parts per billion (Most cases it is not detectable) mandated by the USEPA Lead and Copper rule. We have analyzed 26 first drawn samples from Wanaque supply area and 25 samples from Pequannock supply area in Newark. One sample from the Pequannock supply area showed above 15 ppb concentration. Samples collected from Newark after tap ran 30 seconds have consistently shown below 15 ppb concentration of Lead. Consumers are encouraged to flush the tap 30 seconds to 2 minutes

before collecting water for cooking or drinking. It should be noted that infants and children, who drink water containing lead in excess of action level could experience delays in their physical and mental development. Children could show deficit inattention span and develop learning abilities. Also, adults who drink water with lead above action level for many years could develop kidney problems or high blood pressure.

- Sodium:** For healthy individuals, the sodium intake from water is not important, because a much greater intake of sodium takes place from salt in the diet. However, sodium levels above the recommended upper limit may be of concern to individuals on a sodium restricted diet.
- Cryptosporidium:** Lakes, rivers, and reservoirs may contain this tiny microbe. It is found in human feces and many domestic and wild animals. We test for Cryptosporidium on a monthly basis in our Pequannock finished water surface water supplies. It has never been detected in a viable state in any of our treated water supplies. Neither has it been found in the Wanaque Supply.
- Total Trihalomethanes (TTHMs) and Haloacetic Acids (HAAS):** Trihalomethanes and Haloacetic Acids are formed when raw water is treated with Chlorine. Chlorine is used as a disinfectant to inactivate the disease causing organisms in the water. Trihalomethanes are a group of four chemicals Chloroform, Bromodichloromethane, Dibromochloromethane, and Bromoform. The Maximum Contaminant Level (MCL) of Total Trihalomethanes in drinking water is 80 parts per billion. The five regulated Haloacetic Acids are Monochloroacetic acid, Dichloroacetic acid, Trichloroacetic acid, Mono-Bromoacetic acid and Tribromoacetic acid. The Maximum Contaminant Level (MCL) for Haloacetic Acids is 60 parts per billion. The United States Environmental Protection Agency has set the MCL for both TTHMs and HAAs because they are cancer causing contaminants. The City of Newark water supply met the MCL standards for both TTHMs and HAAs.
- SUBSTANCES THAT MAY BE PRESENT IN WELLS, LAKES, RESERVOIRS, AND OTHER UNTREATED SOURCES**  
These substances include:  
**Microbes** such as viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.  
**Inorganic substances** such as salts and metals that can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining.  
**Pesticides and Herbicides** that may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.  
**Organic chemical substances** including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems.  
**Radioactive substances** that can be naturally occurring or can be the result of oil and gas production and mining activities.  
To ensure that tap water is safe to drink, the Environmental Protection Agency prescribes regulations that limit the amount of certain substances in water provided by public water systems. Food and Drug Administration regulations establish limits for substances in bottled water that must provide the same protection for public health.  
The Safe Drinking Water Act regulations allow monitoring waivers to reduce or eliminate the monitoring requirements for Asbestos, volatile organic chemicals and synthetic organic chemicals. Our system received monitoring waivers for Asbestos and synthetic organic chemicals.
- IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER**  
Water systems with uncovered finished water reservoirs are required to eliminate or cover these reservoirs, treat the discharge from these reservoirs, or be in compliance with a state approved schedule to eliminate or cover the reservoirs or provide treatment by April 1, 2009. We have executed an Administrative Consent Order with the New Jersey Department of Environmental Protection wherein Newark is required to develop a plan and implementation schedule to eliminate, cover or provide treatment for our uncovered reservoir.

## REQUIRED ADDITIONAL HEALTH INFORMATION

**Special considerations regarding children, pregnant women, nursing mothers, and others:** Children may receive slightly higher amount of a contaminant present in their water than adults, on a body weight basis, because they may drink a greater amount of water per pound of body weight than adults do. For this reason reproductive or development effects are used for calculating a drinking water standard if these effect occur at lower levels than other health effects of concern. If there is insufficient toxicity information for a chemical, an extra uncertainty factor may be incorporated into the calculation of drinking water standard, thus making the standard more stringent, to account for uncertainties regarding these effects. In the case of lead and nitrate, effects on infants and children are the health endpoints upon which the standards are based.  
**Nitrate:** Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask for advice from your health care provider.  
**Lead:** Infants and young children are typically vulnerable to lead in drinking water than the more general population. It is possible that lead levels at your home may be higher than at other homes in the vicinity as a result of materials used in your home plumbing. If you are concerned about elevated lead levels in your home water, you may wish to flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water hot line at **1-800-426-4791**.  
**Arsenic:** To ensure that tap water is safe to drink; EPA prescribes limits on the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water.  
**Turbidity:** turbidity is a measure of cloudiness of the water. We monitor it because it is a good indicator of water quality. High turbidity can hinder the effectiveness of disinfectants.

**Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the environmental protection agency's Safe Drinking Water hotline: 1-800-426-4791.**

The Public Water System Identification (PWSID) for Pequannock System is 0714001 and Wanaque system is 1613001. Funding for the City of Newark's Annual Water Quality Report is provided by the Municipal Budget for the Department of Water and Sewer Utilities.

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Department of Water and Sewer Utilities  
Newark City Hall Room B-31F  
920 Broad Street  
Newark, New Jersey 07102

Cory A. Booker, Mayor  
Municipal Council  
Anibal Ramos, Jr. – Acting Council President,  
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Augusto Amador – Council Member, East Ward  
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Luis A. Quintana – Council Member-at-Large  
Ronald C. Rice – Council Member, West Ward  
Darrin S. Sharif – Council Member, Central Ward

Julien X. Neals, Esq., Business Administrator  
Newark Press Information Office  
920 Broad Street  
Newark, New Jersey 07102  
www.ci.newark.nj.us

# 2012 PEQUANNOCK AND WANAQUE WATER SYSTEMS ANNUAL WATER QUALITY REPORT



CORY A. BOOKER, MAYOR

This report contains important information about our drinking water. If you do not understand it, please have someone explain it for you.

Este informe contiene información muy importante sobre su agua beber. Tradúzcalo ó hable con alguien que lo entienda bien.

Este reporte contem informacões importantes sobre a sua água de beber. Traduza-o ou fale com alguém que o compreenda.